Fermilab Today

Thursday, March 31, 2005

Calendar

Thursday, March 31

2:30 p.m. Theoretical Physics Seminar - Curia II

Speaker: P. Huber, University of Wisconsin

Title: Neutrino Properties from Astrophysical Sources

3:30 p.m. DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over

4:00 p.m. Accelerator Physics and Technology Seminar - 1 West

Speaker: L. Michelotti, Fermilab

Title: CHEF: Progress Report on an Interactive Program for Accelerator Optics

Friday, April 1

3:30 p.m. DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over

4:00 p.m. Joint Experimental Theoretical Physics Seminar - 1 West

Speaker: R. Schwienhorst, Michigan State University

Title: Search for Single Top Quark Production at DZero

Weather

Chance Rain **52º/33º**

Extended Forecast

Weather at Fermilab

Current Security Status

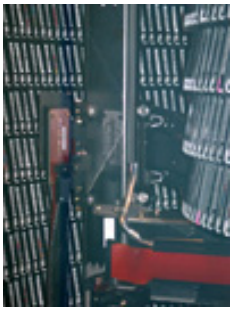
Secon Level 3

Wilson Hall Cafe

CD Achieves Data Transfer Record of 28 TB

To say that Fermilab processes a lot of data is an understatement. On average, the lab processes every single day an amount of data roughly equal to the amount stored in the US Library of Congress, about 20 terabytes. On March 28, the Fermilab Computing Division set a department-best data transfer record of 28 TB in one day.

This latest record means that CD transferred every two seconds more than a CD-ROM's worth of information. DZero and CDF are usually the major sources of incoming data, but a large amount of additional data was needed to exceed 28 TB in one day. That's where the CMS collaboration came in.

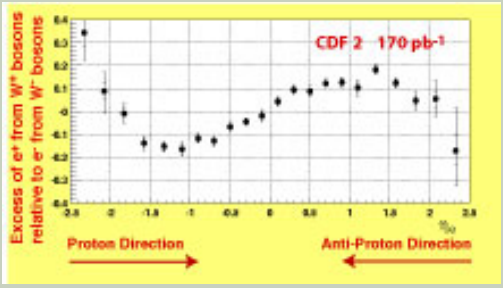


A robotic arm helps transfer one of 3000 tapes mounted today at Fermilab. (Click on image for larger version.)

Using simulated data, CMS is practicing the transfer of data from CERN (tier 0) to Fermilab (tier 1), and the data is then distributed among other US institutions (tier 2) for analysis. Since last week, CMS has steadily increased the amount of data transferred, leading to Monday's record. CD's Don Petravick is understandably pleased. "The fact that we can move data sets that just a few years ago were inconceivably large shows the depth of experience we have in supporting the science going on here at

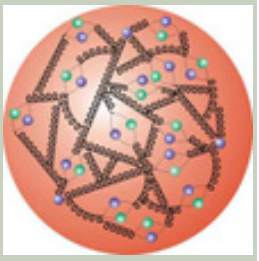
Fermilab Result of the Week

What's in a Proton?



The measured charge asymmetry is plotted versus eta, which is related to the angle between the electron/positron from W decay and the beam. The asymmetry is non-zero due of the internal structure of the proton. (Click on image for larger version.)

The simple answer from high school physics class is that the protons in every atomic nucleus are made of two up-type quarks and one down-type quark, known as valence quarks. However, a more complete description includes a sea of quark-antiquark pairs that are continuously popping in and out of existence and the gluons that bind them all together to form the proton. This complicated picture, which also applies to the antiprotons and their constituent antiquarks, means that physicists who study the proton-antiproton collisions of the Tevatron don't have an exact description of the individual quarks and antiquarks — also called partons — that collide to produce more exotic particles. The W asymmetry affects the precision of some important measurements like its own mass. The mass of the W boson is



The proton consists of three valence quarks and a sea of gluons and quark-antiquark pairs. Graphic: DESY

Thursday, March 31
Santa Fe Black Bean Soup
Marinara Meatball Soup $4.75
Tex-Mex Lasagna $3.75
Sauteed Liver & Onions $3.75
Baked Ham & Swiss on a Ciabatta Roll $4.75
California Pizza $2.75
Crispy Fried Chicken Ranch Salad $4.75

The Wilson Hall Cafe now accepts Visa, Master Card, Discover and American Express at Cash Register #1.

Wilson Hall Cafe Menu
Chez Leon is now open. Call x4512 to make your reservation.

Search

Search the Fermilab Today Archive

search

Info

Fermilab Today is online at:
http://www.fnal.gov/today/

Send comments and suggestions to
today@fnal.gov

Fermilab Today archive

Fermilab Today PDF Version

Fermilab Result of the Week archive

Fermilab Safety Tip of the Week archive

Linear Collider News archive

Fermilab Today classifieds

Subscribe/Unsubscribe to Fermilab Today

the lab," he said. In a couple of years, the lab will receive real collision data produced by the Large Hadron Collider at CERN.

The data transferred from CERN to Fermilab is stored on magnetic tape, not disks, and the Computing Division uses tape libraries on the second floor of Feynman Computing Center. Despite the titanic ebb and flow of data, the tape robots are having no trouble keeping up. "We are working well within our capacity, and even on Monday all systems were about right," said Petravick.
- Eric Bland

Notes from the March UEC Meeting

At the March 5 meeting of the Users Executive Committee, Rob Plunkett presented the status of the NuMI project, including its successful startup, and Dave Finley reported on the February High Energy Physics Advisory Panel (HEPAP) meeting. There was a discussion with Fermilab Director Mike Witherell about the Department of Energy's FY2006 High Energy Physics budget and recent changes to program planning in the Office of High Energy Physics. For details, the minutes of the meeting are available online.

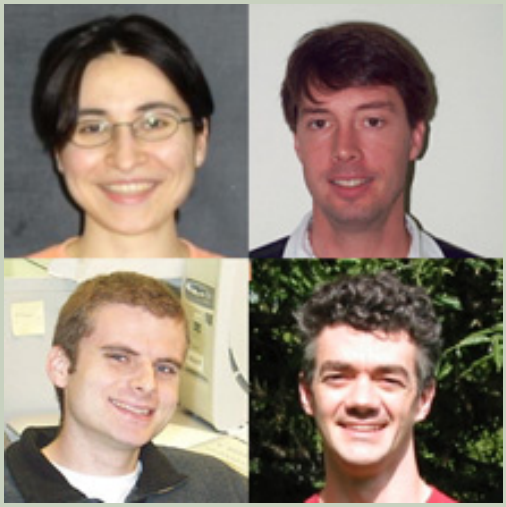

Dave Finley

- Hirohisa A. Tanaka

Accelerator Update

important because, together with the mass of the top quark, allows physicists to predict the mass of the elusive Higgs Boson.

Fortunately, the Tevatron also provides opportunities to measure the composition of the proton, described by the parton momentum distribution function (PDF), by measuring the forward-backward asymmetry of leptons from W boson decays. More W+ bosons are produced moving in the same direction as the colliding protons (forward), while W- bosons tend to be produced moving in the opposite direction: the details of this distribution are sensitive to the subtle effects of the sea quarks. A recent paper (PRD RC 71, 051104) from CDF reports a measurement of the W asymmetry with 170 pb^{-1} of data from Run II, using a new technique to perform silicon tracking close to the beamline. Once incorporated into theoretical models, this new information will lead to more precise measurements in the future at both CDF and DZero.


The key contributors to CDF's W-asymmetry measurement (clockwise from top left): Cigdem Issever (Oxford, formerly UC Santa Barbara), David Stuart (UC Santa Barbara), Tim Nelson (SLAC, formerly Fermilab) and Adam Scott (UC Santa Barbara).

Result of the Week Archive

March 28 - March 30

- During this 48 hour period Operations established one store that combined with an existing store provided the experiments with approximately 45 hours an 36 minutes of luminosity
- Booster suffered from RF problems
- Tevatron motion detectors record Sumatra earthquake
- Linac experts discover and repair RF station hose leaks
- I- Source motor generator failed
- Booster vacuum valves close
- Antiproton Source emittances affects stacking

Read the Current Accelerator Update
Read the Early Bird Report
View the Tevatron Luminosity Charts

In the News

From *AScribe*, March 29, 2005

Argonne National Laboratory Is Focus of New Alliance Between University of Chicago, Northwestern, University of Illinois

CHICAGO, March 29 (AScribe Newswire) -- The University of Chicago has established a new Science Policy Council in collaboration with Northwestern University and the University of Illinois that will oversee the scientific mission of Argonne National Laboratory. The Council is expected to enhance Argonne's scientific capabilities, strengthen the state's technological base and workforce preparation, and improve Illinois' ability to receive federal research funding.
read more

Announcements

Women's Personal Protection and Self Defense Spring Class

Due to its success, we will be offering another class session in the spring from April 6 to May 18. Classes are held in Kuhn Barn from 5:30-7:30PM. The cost is $35.00. This class is open to Fermilab women, their mothers and daughters, minimum age is 12, no maximum age. For more information and testimonials from past participants visit the Recreation Office Web site.

Fermi Singers Perform on April 22

The Fermi Singers are back! Mark your calendars for April 22 at noon in the Auditorium. The singers will present a Spring Concert for your listening pleasure. Snacks will be available following the performance!

Upcoming Activities